

What is Claimed is:

1. A heat exchanger, comprising:
a conduit wound as a spiral strand having a helicoidal shape, wherein the
5 helicoidally shaped strand has a plurality of loops; and
a fin in contact with and extending between said loops.
2. The heat exchanger according to claim 1, wherein a cross section of said tube is
selected from the group consisting of circular, elliptical, lenticular, triangular,
10 square, rectangular, and multi-sided polygons.
3. The heat exchanger according to claim 1, further comprising a plurality of fins and
said plurality of fins are spaced apart at regular intervals with one another.
- 15 4. The heat exchanger according to claim 1, wherein said fin is continuous.
5. The heat exchanger according to claim 1, wherein said fin is comprised of fin
segments.
- 20 6. The heat exchanger according to claim 1, said helicoidal-shaped tube having an
open core and further comprising a blower apparatus having an impeller rotably
mounted within said core.
7. The heat exchanger according to claim 1, further comprising a blower apparatus
25 whose impeller is rotably mounted around said helicoidally shaped strand.
8. The heat exchanger according to claim 1, wherein the loop of the helicoidally
shaped strand has a configuration selected from the group consisting of circular,
elliptical, lenticular, triangular, square, rectangular, and multi-sided polygons.
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9. The heat exchanger according to claim 1, wherein said tube includes a plurality of

micro-channels.

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10. The heat exchanger according to claim 1, wherein said helical tube forms a first winding and said fin forms a second winding, and wherein said first and second windings alternate in an axial direction.
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11. The heat exchanger according to claim 1, wherein said fin includes a plurality of openings and said tube passes through at least one opening of said plurality of openings.
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12. The heat exchanger according to claim 11, wherein said plurality of openings are formed by a plurality of through-holes equal to the number of helicoidal tube turns in a longitudinal direction of said plurality of fins and said through-holes receive said tube.
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13. The heat exchanger according to claim 1, wherein said fin has first and second surfaces formed by folding a first sheet of a heat conductive material back and forth on itself to provide accordion-like folds which define said fin and attaching said tube to said fin along the fold lines.
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14. The heat exchanger according to claim 13, wherein said fin includes a plurality of openings and each of said plurality of openings is formed by a plurality of notches or holes at or below said fold lines for receiving said tube.
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15. The heat exchanger according to claim 1, further comprising at least one other conduit wound as a spiral strand having a helicoidal shape.
16. The heat exchanger according to claim 15, wherein the said strands have equal coil pitch, and equal coil diameters.
17. The heat exchanger according to claim 15, wherein the said strands have different coil pitch, and different coil diameters.

18. The heat exchanger according to claim 15, wherein said strands have different tube diameters.
- 5 19. The heat exchanger according to claim 15, wherein said strands are adapted to receive and to output a first working fluid and said tubes are connected together to provide for fluid in individual strands to flow parallel or counter to each other.
- 10 20. A helicoidal tube heat exchanger comprising:
a tube adapted to receive and to output a first working fluid;
said tube being substantially helical such as to define at least one interval space between at least two loops of said tube; and
a fin in thermodynamic communication with said tube and bridging said at least one interval space.
- 15 21. The helicoidal tube fin heat exchanger according to claim 20, said helical tube forming a first winding, said fin forming a second winding, and wherein said first and second windings alternate in an axial direction.
- 20 22. The helicoidal tube fin heat exchanger according to claim 20, wherein said fin includes openings and said tube passes through said openings.
- 25 23. The helicoidal tube fin heat exchanger according to claim 20, said helical tube having an open core and further comprising a blower apparatus having an impeller rotably associated with the said tube.
- 30 24. The helicoidal tube fin heat exchanger according to claim 20, wherein said tube includes a plurality of micro-channels and said first working fluid is distributed in said plurality of micro-channels.
25. The helicoidal tube fin heat exchanger according to claim 20, wherein said fin has first and second surfaces formed by folding a first sheet of a heat conductive

material back and forth on itself to provide accordion-like folds which define said fin and attaching said tube to said fin along the fold surface.

- 5 26. The helicoidal tube fin heat exchanger according to claim 1, where the fin surface is selected from the group consisting of plain, perforated, louvered, slotted, wavy, and spine.
- 10 27. The helicoidal tube fin heat exchanger according to claim 9, where the cross section of the micro-channels is selected from the group consisting of circular, elliptical, lenticular, triangular, square, rectangular, and multi-sided polygons.